

Background

- Pollicization of the index finger is a rewarding procedure for children with radial deficiency in which the index finger MCP becomes the neo-thumb CMC
- Lochner et al 2012 demonstrated a rate of 25% of index finger proximal phalanx physeal arrest, and an anatomical dissection of the blood supply to the physis

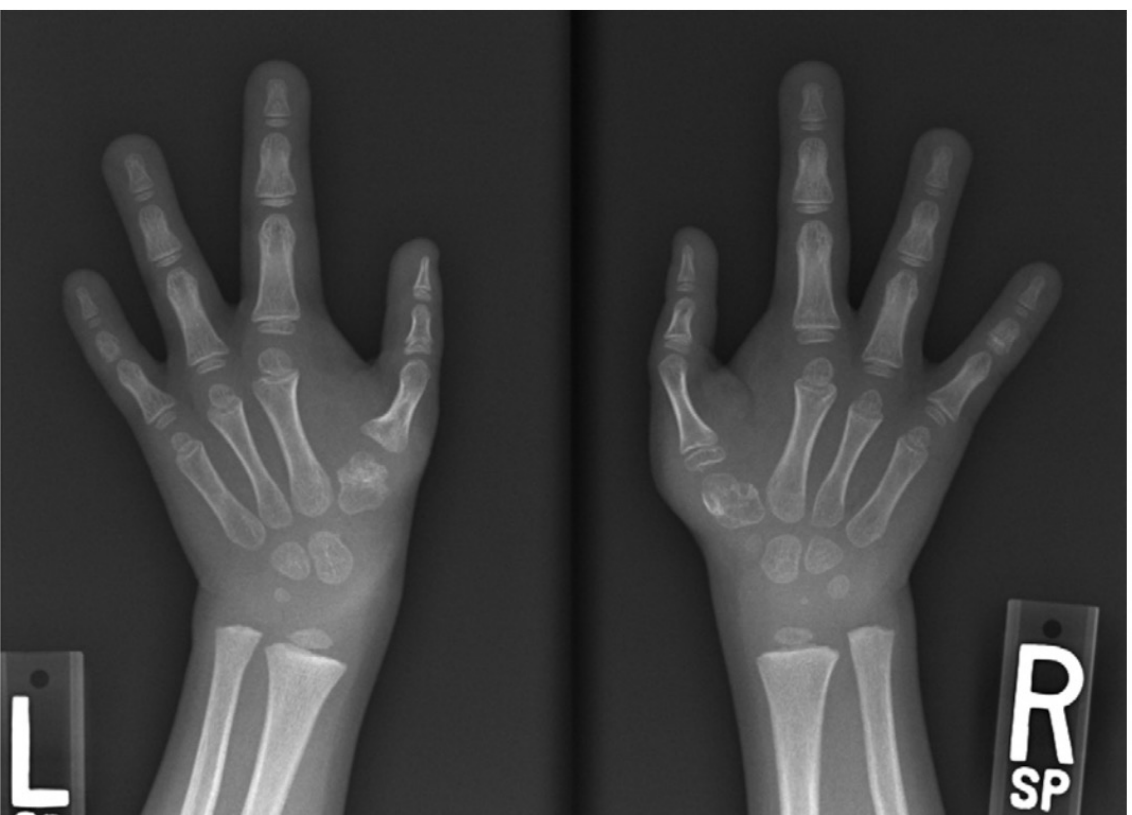


FIGURE 1: Radiograph of bilateral pollicizations with complete growth arrest of the left proximal phalanx epiphysis.



FIGURE 2: Radiograph showing a partial physeal growth arrest at the radial side of the proximal phalanx.

The aim of this study is to determine if preservation of blood supply to the index MCPJ decreases the rate of physeal arrest.

Methods

- Retrospective review of Type III, IV, V thumb hypoplasia
- 2007-2021 cohort compared to Lochner et al historical cohort
- Single institution, 3 surgeons
- 42 pollicizations with 2 year minimum radiographic follow up
- Preservation of physeal blood supply

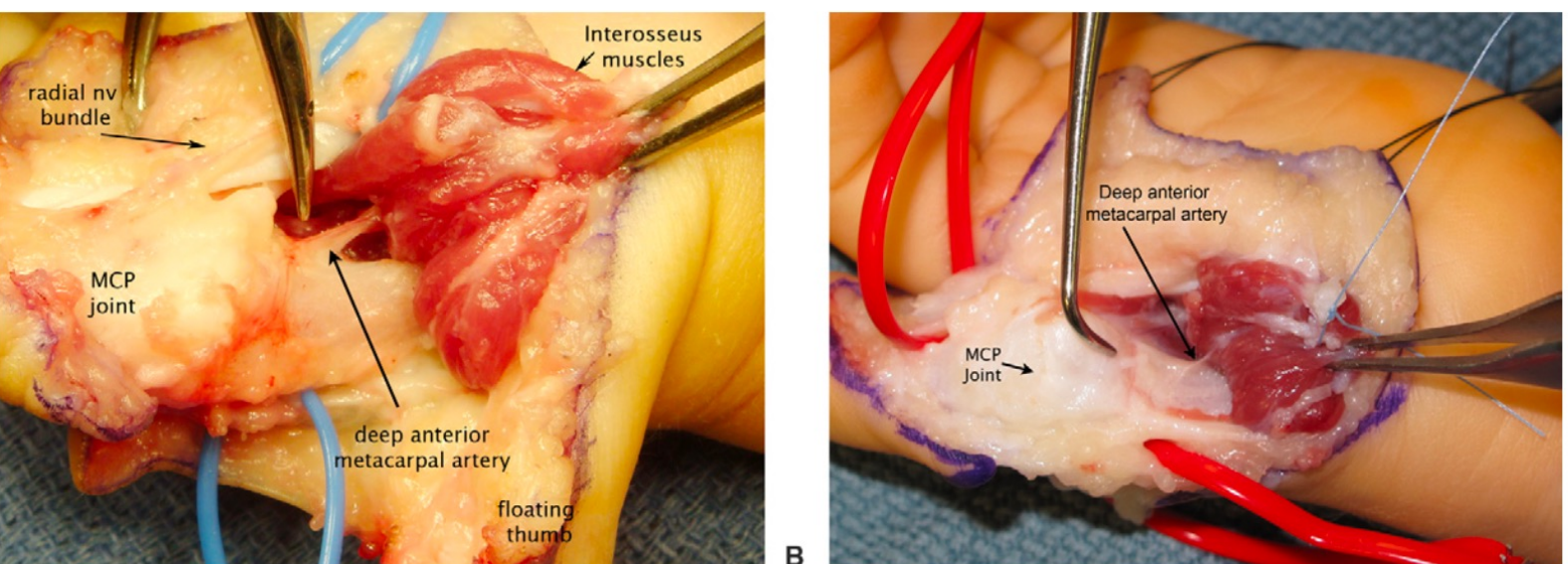


FIGURE 4: **A** Intraoperative photograph of the deep anterior metacarpal artery supplying the index finger proximal phalanx epiphysis in a type IV hypoplastic thumb. **B** Second intraoperative photograph of the deep anterior metacarpal artery in a type V absent thumb. n.v, neurovascular.

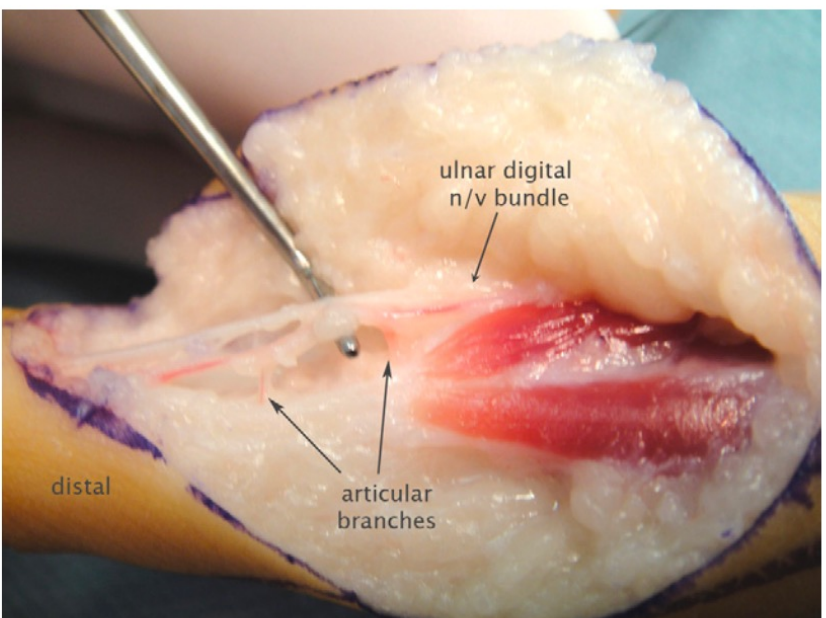


FIGURE 5: Intraoperative photograph of the proper digital artery supplying the index finger proximal phalanx epiphysis. n/v, neurovascular.

Results

42 pollicized digits in 36 patients with 2 years radiographic follow up compared to a historical cohort described in Lochner et al 2012 of 85 pollicized digits

Physeal Arrest



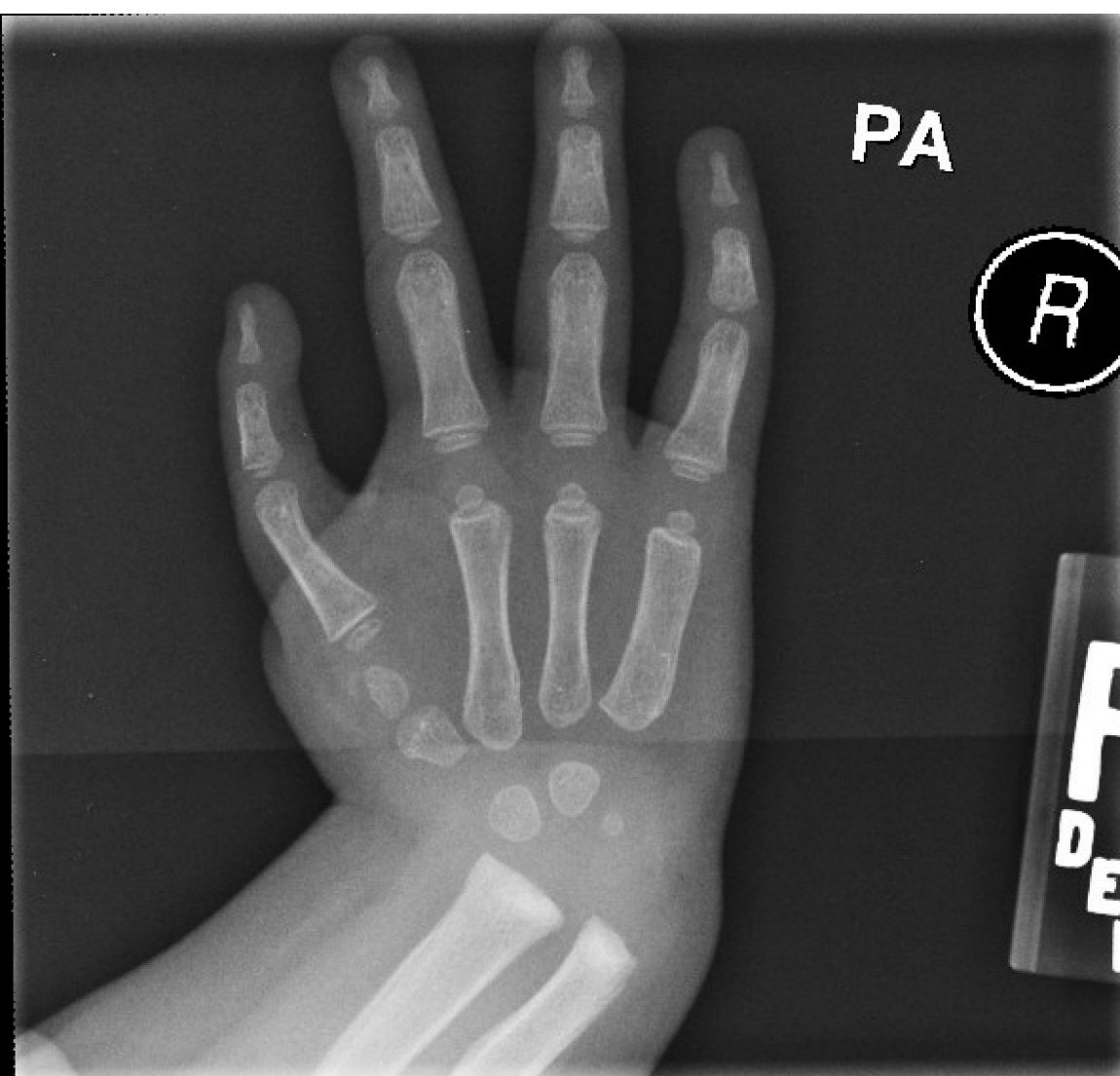
7.1% v 24.7 %

$$p = 0.017$$

2 incomplete arrests
1 complete arrest

Figure 1. Xray demonstrating partial physeal closure.

Nonunion and CMC Instability



12% v 18%

$$p > 0.05$$

5 patients with no radiographic union

1 patient with CMCI instability.

Figure 2. Xray demonstrating bony nonunion.

Table 1. Patient demographics.

Age at Surgery (months)	Median 26 Mean 31.5 St. dev 20.5
Gender	
Female	18
Male	23
Type of Thumb Hypoplasia	
3A	1
3B	13
4	17
5	10
Radial Dysplasia	
Type 0	16
Type 1	20
Type 2	2
Type 3	1
Type 4	2
Syndrome	
None	16
Holt Oram	8
VACTERL	11
Fanconi's	1
Other	5

Conclusion

- Preservation of the physeal artery to the proximal phalanx is included in our technique and has not yet been described in pollicization techniques described by other groups.
- These findings suggests that sparing of the physeal blood supply is preventative against proximal phalanx physeal arrest